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Comparison of Liver Tumors associated with Androgen Use in Non-Fanconi's Anemia (FA) and Fanconi's Anemia Patients

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Background: Patients with FA are at increased risk of leukemia and solid tumors. In the literature there are 36/37 FA patients with liver tumors who had received androgens. Liver tumors following androgens have been reported in other conditions.
Objective: The purpose of this study was to identify the non-FA conditions, determine whether there is a difference between FA and non-FA patients in sex, types of tumors, ages at diagnosis of tumors, types of androgens, cumulative dose and duration of androgen exposure.

Design/Methods: Literature cases of liver tumors and androgen use were identified using PubMed, Web of Science, and Ovid Medline, with multiple search terms for liver tumors and androgens. The references of the articles were reviewed for any additional citations. Variables were entered in an Excel spreadsheet, and descriptive statistics were obtained using Excel and Stata 7.
Results: There were 97 non-FA patients reported to have liver tumors following treatment with androgens. These cases included 40 with aplastic anemia (AA), and 57 with non-AA: 19 endocrine, 8 other anemias, 7 gynecological, 5 hereditary angioedema, 4 immune thrombocytopenic purpura, 3 paroxysmal nocturnal hemoglobinuria, 4 body builders, and 8 others. Sex ratios were similar in non-FA and FA cases (>60% male).

The main liver tumors were hepatocellular carcinomas (HCC) and adenomas. HCC occurred more frequently in FA (58%) and AA (60%) than in non-AA (42%). Liver tumors developed at median ages of 13, 24, and 46 respectively in FA, AA , non-AA patients.

The more frequently used androgens were oxymetholone, methyltestosterone and danazol.

In patients who received oxymetholone or methyltestosterone, alone or in combination with other androgens, HCC occurred more frequently than in those patients who received danazol. HCC comprised 36/57 liver tumors on oxymetholone, 14/24 on methyltestosterone, and 4/15 on danazol. Danazol was not reported in FA or AA. There were no differences among all cases with regard to the dose or duration of androgens.

Conclusions: Liver tumors have been reported in a variety of patients treated with androgens, particularly oxymetholone and methyltestosterone. The association of HCC with these androgens was more common in FA or AA patients. Danazol was associated with adenomas in non-AA patients. Whether HCC or other liver tumors would occur in FA or AA patients treated with danazol remains to be determined.

Disclosure: No information to disclose